

**§ 61.125 Aeronautical knowledge.**

(a) *General.* A person who applies for a commercial pilot certificate must receive and log ground training from an authorized instructor, or complete a home-study course, on the aeronautical knowledge areas of paragraph (b) of this section that apply to the aircraft category and class rating sought.

(b) *Aeronautical knowledge areas.* (1) Applicable Federal Aviation Regulations of this chapter that relate to commercial pilot privileges, limitations, and flight operations;

(2) Accident reporting requirements of the National Transportation Safety Board;

(3) Basic aerodynamics and the principles of flight;

(4) Meteorology to include recognition of critical weather situations, windshear recognition and avoidance, and the use of aeronautical weather reports and forecasts;

(5) Safe and efficient operation of aircraft;

(6) Weight and balance computations;

(7) Use of performance charts;

(8) Significance and effects of exceeding aircraft performance limitations;

(9) Use of aeronautical charts and a magnetic compass for pilotage and dead reckoning;

(10) Use of air navigation facilities;

(11) Aeronautical decision making and judgment;

(12) Principles and functions of aircraft systems;

(13) Maneuvers, procedures, and emergency operations appropriate to the aircraft;

(14) Night and high-altitude operations;

(15) Procedures for operating within the National Airspace System; and

(16) Procedures for flight and ground training for lighter-than-air ratings.

**§ 61.127 Flight proficiency.**

(a) *General.* A person who applies for a commercial pilot certificate must receive and log ground and flight training from an authorized instructor on the areas of operation of this section that apply to the aircraft category and class rating sought.

(b) *Areas of operation.* (1) For an airplane category rating with a single-engine class rating:

- (i) Preflight preparation;
- (ii) Preflight procedures;
- (iii) Airport and seaplane base operations;
- (iv) Takeoffs, landings, and go-arounds;
- (v) Performance maneuvers;
- (vi) Ground reference maneuvers;
- (vii) Navigation;
- (viii) Slow flight and stalls;
- (ix) Emergency operations;
- (x) High-altitude operations; and
- (xi) Postflight procedures.

(2) For an airplane category rating with a multiengine class rating:

- (i) Preflight preparation;
- (ii) Preflight procedures;
- (iii) Airport and seaplane base operations;
- (iv) Takeoffs, landings, and go-arounds;
- (v) Performance maneuvers;
- (vi) Navigation;
- (vii) Slow flight and stalls;
- (viii) Emergency operations;
- (ix) Multiengine operations;
- (x) High-altitude operations; and
- (xi) Postflight procedures.

(3) For a rotorcraft category rating with a helicopter class rating:

- (i) Preflight preparation;
- (ii) Preflight procedures;
- (iii) Airport and heliport operations;
- (iv) Hovering maneuvers;
- (v) Takeoffs, landings, and go-arounds;
- (vi) Performance maneuvers;
- (vii) Navigation;
- (viii) Emergency operations;
- (ix) Special operations; and
- (x) Postflight procedures.

(4) For a rotorcraft category rating with a gyroplane class rating:

- (i) Preflight preparation;
- (ii) Preflight procedures;
- (iii) Airport operations;
- (iv) Takeoffs, landings, and go-arounds;
- (v) Performance maneuvers;
- (vi) Navigation;
- (vii) Flight at slow airspeeds;
- (viii) Emergency operations; and
- (ix) Postflight procedures.

(5) For a powered-lift category rating:

- (i) Preflight preparation;
- (ii) Preflight procedures;
- (iii) Airport and heliport operations;
- (iv) Hovering maneuvers;

- (v) Takeoffs, landings, and go-arounds;
- (vi) Performance maneuvers;
- (vii) Ground reference maneuvers;
- (viii) Navigation;
- (ix) Slow flight and stalls;
- (x) Emergency operations;
- (xi) High-altitude operations;
- (xii) Special operations; and
- (xiii) Postflight procedures.
- (6) For a glider category rating:
  - (i) Preflight preparation;
  - (ii) Preflight procedures;
  - (iii) Airport and gliderport operations;
  - (iv) Launches and landings;
  - (v) Performance speeds;
  - (vi) Soaring techniques;
  - (vii) Performance maneuvers;
  - (viii) Navigation;
  - (ix) Slow flight and stalls;
  - (x) Emergency operations; and
  - (xi) Postflight procedures.
- (7) For a lighter-than-air category rating with an airship class rating:
  - (i) Fundamentals of instructing;
  - (ii) Technical subjects;
  - (iii) Preflight preparation;
  - (iv) Preflight lesson on a maneuver to be performed in flight;
  - (v) Preflight procedures;
  - (vi) Airport operations;
  - (vii) Takeoffs, landings, and go-arounds;
  - (viii) Performance maneuvers;
  - (ix) Navigation;
  - (x) Emergency operations; and
  - (xi) Postflight procedures.
- (8) For a lighter-than-air category rating with a balloon class rating:
  - (i) Fundamentals of instructing;
  - (ii) Technical subjects;
  - (iii) Preflight preparation;
  - (iv) Preflight lesson on a maneuver to be performed in flight;
  - (v) Preflight procedures;
  - (vi) Airport operations;
  - (vii) Launches and landings;
  - (viii) Performance maneuvers;
  - (ix) Navigation;
  - (x) Emergency operations; and
  - (xi) Postflight procedures.

#### § 61.129 Aeronautical experience.

(a) *For an airplane single-engine rating.* Except as provided in paragraph (i) of this section, a person who applies for a commercial pilot certificate with an airplane category and single-engine

class rating must log at least 250 hours of flight time as a pilot that consists of at least:

(1) 100 hours in powered aircraft, of which 50 hours must be in airplanes.

(2) 100 hours of pilot-in-command flight time, which includes at least—

(i) 50 hours in airplanes; and

(ii) 50 hours in cross-country flight of which at least 10 hours must be in airplanes.

(3) 20 hours of training on the areas of operation listed in § 61.127(b)(1) of this part that includes at least—

(i) 10 hours of instrument training of which at least 5 hours must be in a single-engine airplane;

(ii) 10 hours of training in an airplane that has a retractable landing gear, flaps, and a controllable pitch propeller, or is turbine-powered, or for an applicant seeking a single-engine seaplane rating, 10 hours of training in a seaplane that has flaps and a controllable pitch propeller;

(iii) One cross-country flight of at least 2 hours in a single-engine airplane in day VFR conditions, consisting of a total straight-line distance of more than 100 nautical miles from the original point of departure;

(iv) One cross-country flight of at least 2 hours in a single-engine airplane in night VFR conditions, consisting of a total straight-line distance of more than 100 nautical miles from the original point of departure; and

(v) 3 hours in a single-engine airplane in preparation for the practical test within the 60-day period preceding the date of the test.

(4) 10 hours of solo flight in a single-engine airplane on the areas of operation listed in § 61.127(b)(1) of this part, which includes at least—

(i) One cross-country flight of not less than 300 nautical miles total distance, with landings at a minimum of three points, one of which is a straight-line distance of at least 250 nautical miles from the original departure point. However, if this requirement is being met in Hawaii, the longest segment need only have a straight-line distance of at least 150 nautical miles; and

(ii) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the